WHAT IS CLAIMED IS

1. A semiconductor laser element comprising:

a first stripe which emits first laser beams and has a first active layer laminated on one part of an area in a semiconductor substrate; and

a second stripe which emits second laser beams and has a second active layer laminated in the other part of the area of said semiconductor substrate , wherein

the distance between the center lines of said first stripe and said second stripe is 10 to 100μm.

2. The semiconductor laser element according to claim 1, wherein said first stripe and said second stripe are formed, to extend in parallel to each other.

3. The semiconductor laser element according to claim 1, wherein the distance between the insides of said first stripe and said second stripe is 5μm or more.

4. The semiconductor laser element according to claim 1, comprising:

a first electrode formed on the upper section of said first active layer and said second active layer;

a second electrode formed on the lower section of said semiconductor substrate; and

a heat sink at least a part of which is formed with diamond, wherein

said first electrode or said second electrode is bonded to said diamond of said heat sink.

5. The semiconductor laser element according to claim 1, wherein the wavelengths of said first laser beams and said second laser beams are approximately 1200nm to approximately 1600nm.

6. A semiconductor laser module comprising:

a semiconductor laser element which has a first stripe which emits first laser beams and has a first active layer laminated on one part of an area in a semiconductor substrate, and a second stripe which emits second laser beams and has a second active layer laminated in the other part of the area of said semiconductor substrate, wherein the distance between the center lines of said first stripe and said second stripe is 10 to 100μm;

a first lens where said first laser beams and said second laser beams which have been emitted from said semiconductor laser element are entered, and are separated, so that the distance between the first laser beams and the second laser beams is broadened;

a polarization rotating unit, wherein only one of said

first laser beams and said second laser beams, which have passed through said first lens, enter said unit and rotates the plane of polarization of the entered laser beams by a predetermined angle;

a polarization combining unit comprising a first port which said first laser beams from said first lens or said polarization rotating unit enter, a second port which said second laser beams from said polarization rotating unit or said first lens enter, and a third port where said first laser beams entered from said first port, and said second laser beams entered from said second port are multiplexed and emitted; and

an optical fiber which receives laser beams emitted from said third port of said polarization combining unit, and sends said beams to the outside.

7. The semiconductor laser module according to claim 6, wherein said first lens is preferably positioned, so that an optical axis of said first laser beams emitted from said first stripe and an optical axis of said second laser beams emitted from said second stripe are substantially in symmetry with respect to the central axis of said first lens.

8. The semiconductor laser module according to claim 6, wherein said polarization combining unit is a birefringent element, by which any one of said first laser beams entered from said first port, and said second laser beams entered from said second port propagate to said third port as an ordinary ray, and the other beams propagate to said third port as an extraordinary ray.

9. The semiconductor laser module according to claim 8, wherein surfaces where said first port and said second port of said polarization combining unit are formed inclined, so that said ordinary ray propagates in the direction of the axis line of said optical fiber.

10. The semiconductor laser module according to claim 8, wherein said semiconductor laser element, and said first lens are arranged to be inclined by a predetermined angle to the direction of the axis line so that said ordinary ray propagates in said direction of the axis line of said optical fiber.

11. The semiconductor laser module according to claim 6, wherein said polarization rotating unit and said polarization combining unit are fixed to the same holder part.

12. The semiconductor laser module according to claim 6, wherein a prism, where said first laser beams and said second laser beams are entered, and emitted to make their optical axes substantially parallel to each other, is disposed between said first lens and said polarization combining unit.

13. The semiconductor laser module according to claim 12, wherein said prism, said polarization rotating unit, and said polarization combining unit are fixed to the same holder part.

14. The semiconductor laser module according to claim 6, comprising a second lens, which is disposed between said polarization combining unit and said optical fiber, and by which laser beams emitted from said third port of said polarization combining unit are optically coupled to said optical fiber.

15. The semiconductor laser module according to claim 14, wherein said first lens is positioned, so that said first laser beams and said second laser beams focus on focal points between said first lens and said second lens.

16. The semiconductor laser module according to claim 6, wherein an optical reflection section, by which beams with a predetermined wavelength are feed-back to said semiconductor laser element, is provided.

17. The semiconductor laser module according to claim 16, wherein said optical reflection section is a fiber grating formed in said optical fiber.

18. The semiconductor laser module according to claim 6, comprising: a cooling device which cools said semiconductor laser element; and a base which is fixed to said cooling device, and mounts said semiconductor laser element, wherein said first lens, said polarization rotating unit and said polarization combining unit are fixed to said base.

19. The semiconductor laser module according to claim 18, wherein said base comprises: a first base which fixes said semiconductor laser element; and a second base which is fixed to said first base, and fixes said first lens, said polarization rotating unit, and said polarization combining unit.

20. A fabrication method of a semiconductor laser module provided with:

a semiconductor laser element which has a first stripe which emits first laser beams and has a first active layer laminated on one part of an area in a semiconductor substrate, and a second stripe which emits second laser beams and a second active layer laminated in the other part of the area of said semiconductor substrate, wherein the distance between the center lines of said first stripe and said second stripe is 10 to 100μm;

a first lens where said first laser beams and said second laser beams which have been emitted from said semiconductor laser element are entered, and are separated, so that the distance between the first laser beams and the second laser beams is broadened;

a polarization rotating unit, wherein only one of said first laser beams and said second laser beams, which have passed through said first lens, enter said unit and rotates the plane of polarization of the entered laser beams by a predetermined angle;

a polarization combining unit comprising a first port which said first laser beams from said first lens or said polarization rotating unit enter, a second port which said second laser beams from said polarization rotating unit or said first lens enter, and a third port where said first

laser beams entered from said first port, and said second laser beams entered from said second port are multiplexed and emitted; and

an optical fiber which receives laser beams emitted from said third port of said polarization combining unit, and sends said beams to the outside, wherein the fabrication method of a semiconductor laser module comprises the following steps:

a first step to fix said semiconductor laser element to a base;

a second step to fix said first lens to said base after centering in a state where laser beams are emitted from said semiconductor laser element;

a third step to fix said polarization rotating unit to said base after centering in a state where laser beams are emitted from said semiconductor laser element;

a fourth step to fix said polarization combining unit to said base after centering in a state where laser beams are emitted from said semiconductor laser element; and

a fifth step to fix said optical fiber after centering in a state where laser beams are emitted from said semiconductor laser element.

21. The fabrication method of a semiconductor laser module according to claim 20, wherein said polarization rotating unit and said polarization combining unit are fixed to the same holder part, and said third step and said fourth step are performed at the same time by centering said holder part.

22. The fabrication method of a semiconductor laser module according to claim 21, wherein

centering said holder part comprises the following steps:

a step to emit laser beams from both said first stripe and said second stripe of said semiconductor laser element;

a step to make said first laser beams emitted from said first stripe enter said first port of said polarization combining unit, and, at the same time to make said second laser beams emitted from said second stripe enter said second port of said polarization combining unit;

a step to adjust the position of said holder part by rotating it around a center axis so that said first laser beams which enter said first port, and said second laser beams which enter said second port are emitted together from said third port; and

a step to fix the position around said center axis of said holder part after the step of said adjustment.

23. The fabrication method of a semiconductor laser module

according to claim 20, wherein a prism, where said first laser beams and said second laser beams are entered, and emitted to make their optical axes substantially parallel to each other, is disposed between said first lens and said polarization combining unit; said prism, said polarization rotating unit, and said polarization combining unit are fixed to the same holder part; and said third step and said fourth step are performed at the same time by centering said holder part.

24. The fabrication method of a semiconductor laser module according to claim 23, wherein

centering said holder part comprises the following steps:

a step to emit laser beams from both said first stripe and said second stripe of said semiconductor laser element;

a step to make said first laser beams emitted from said first stripe enter said first port of said polarization combining unit, and, at the same time to make said second laser beams emitted from said second stripe enter said second port of said polarization combining unit;

a step to adjust the position of said holder part by rotating it around a center axis so that said first laser beams which enter said first port, and said second laser beams which enter said second port are emitted together from

said third port; and

a step to fix the position around said center axis of said holder part after the step of said position adjustment.

25. An amplifier for optical fiber, comprising:

a semiconductor laser module that is equipped with,

a semiconductor laser element which has a first stripe which emits first laser beams and has a first active layer laminated on one part of an area in a semiconductor substrate, and a second stripe which emits second laser beams and has a second active layer laminated in the other part of the area of said semiconductor substrate, wherein the distance between the center lines of said first stripe and said second stripe is 10 to 100μm;

a first lens where said first laser beams and said second laser beams which have been emitted from said semiconductor laser element are entered, and are separated, so that the distance between the first laser beams and the second laser beams is broadened;

a polarization rotating unit, wherein only one of said first laser beams and said second laser beams, which have passed through said first lens, enter said unit and rotate the plane of polarization of the entered laser beams by a predetermined angle;

a polarization combining unit comprising a first port which said first laser beams from said first lens or said polarization rotating unit enter, a second port which said second laser beams from said polarization rotating unit or said first lens enter, and a third port where said first laser beams entered from said first port, and said second laser beams entered from said second port are multiplexed and emitted;

an optical fiber which receives laser beams emitted from said third port of said polarization combining unit, and sends said beams to the outside; and

said optical fiber on which signal beams are transmitted, wherein

excitation beams emitted form said semiconductor laser module, and said signal beams transmitted on said optical fiber are multiplexed to give gains to said signal beams.